B3345
University of Wisconsin-Extension Cooperative Extension

Wisconsin Safe Food Preservation Series

Canning Meat, Wild Game, Poultry & Fish Safely

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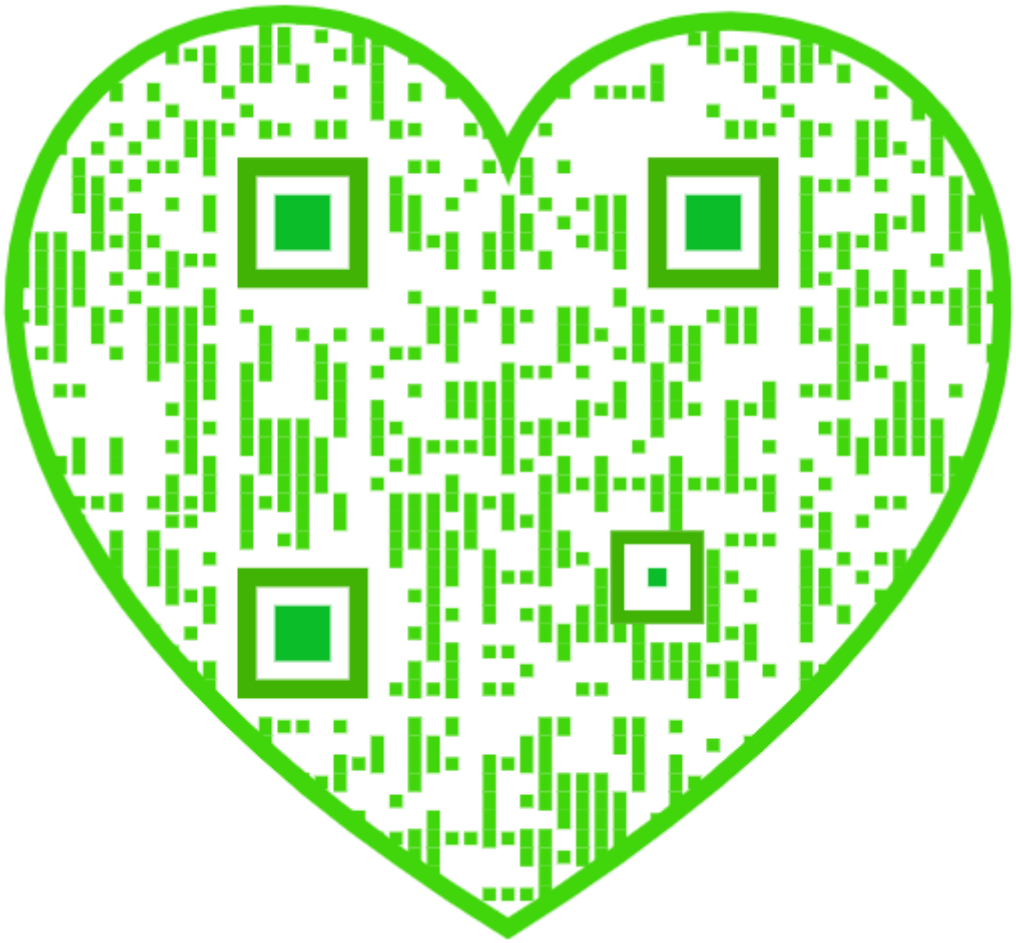


What could be more inviting than a warm bowl of beef or venison stew on a cold winter day? Or perhaps your family prefers mouth-watering chicken pot pie, or fish chowder. These comforting dishes are easily prepared from home-canned meat, wild game, poultry and fish.

Beef, pork, lamb, poultry, fish and wild game animals and birds can be safely canned at home with good results — provided you start with properly handled meat, wild game, poultry and fish and carefully follow the processing guidelines in this booklet.

Start with high quality ingredients

It is important to know that meat, wild game, poultry and fish have been handled under sanitary conditions throughout processing. Careless handling can lead to spoilage through contamination with food poisoning bacteria such as *Salmonella, Listeria* and *Escherichia coli* O157:H7 *(E. coli)*.

Sanitary facilities and equipment plus quick chilling are essential to maintaining meat quality and controlling growth of spoilage and disease-causing bacteria.

For high quality canned meat, wild game, poultry and fish, start with high quality ingredients. If you butcher animals at home or hunt wild game, be sure to follow safe food handling guidelines. Or choose a commercial meat processing plant to do the job for you.

It is important to know that meat, wild game, poultry and fish have been safely handled throughout processing. Unsafe handling can lead to contamination with food poisoning bacteria such as *Salmonella, Listeria* and *Escherichia coli* O157:H7 *(E. coli)*.

Fish and shellfish are the most perishable of all raw foods, and require careful handling to maintain safety and quality. Fish and shellfish can be significant sources of food poisoning bacteria such as *Clostridium botulinum*, and require a longer processing time in a pressure canner than do other foods canned at home.

Meat, wild game and poultry

If you purchase meat or poultry for canning, be sure it is fresh and properly chilled or frozen, and inspected by state or U.S. Department of Agriculture (USDA) authorities.

If you butcher animals at home or hunt wild game, handle the meat carefully. See preparation on page 10. While some people have the right equipment and knowledge to butcher their own animals, most are well advised to have a commercial meat processor do the job. See page 31 for tips on choosing a meat processor.

Fish

These species of freshwater fish are suitable for canning:

Catfish

Northern pike

Salmon

Smelt

Trout

Panfish such as crappies, perch and bass, walleye and other pike are much better preserved by freezing (see pages 6-7).

Take special care to maintain quality because fish are the most perishable of all raw foods. Keep work surfaces, hands and utensils clean. Keep fish on ice or refrigerated at 40˚ F or colder.

Fish and shellfish can be significant sources of food poisoning bacteria such as *Clostridium botulinum,* and require longer processing time in a pressure canner than do other foods canned at home.

Meat, wild game and poultry for canning

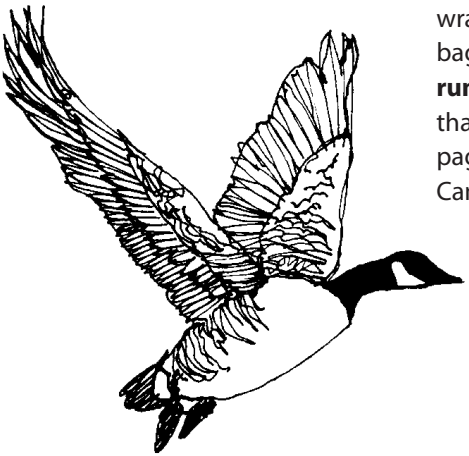
You may use either fresh or frozen meat, wild game, poultry or fish for canning.

If you use fresh meat, wild game, poultry or fish for canning, be sure to follow these recommended **safe handling guidelines:**

- Keep fresh meat, wild game, poultry and fish refrigerated at 40˚ F or colder. Store for no more than 2 days before canning.
- Separate raw meat and fish from other foods in the refrigerator. Place raw meat or fish on a plate or tray on the bottom shelf of the refrigerator to prevent juices from dripping on other foods.

- Wash hands well before and after handling raw meat, wild game, poultry and fish. Wash hands for 20 seconds with soap and warm water, scrubbing under fingernails and along the palm and back of each hand.
- Wash cutting boards and knives, equipment and kitchen surfaces with warm soapy water after cutting up raw meat, wild game, poultry and fish. Rinse cleaned items with warm water. Then sanitize with a **dilute bleach solution**: 1 teaspoon of bleach in 1 quart of warm water.

Some meat, wild game and poultry require extra handling before canning, either a period of storage in the refrigerator or a soak in brine. Read and follow each recipe carefully. (See special guidelines for handling fresh fish for canning on pages 6-7.)



Freezing meats for canning

Meat, wild game and poultry will exhibit best quality if canned fresh. However, if you choose to freeze these items for canning, follow these guidelines (see page 4 for ground meat, and pages 6-7 for fish):

- Trim visible fat from wild game to avoid off-flavors. Wrap meat tightly in plastic freezer wrap, plastic or wax-coated freezer paper or aluminum foil, and place in a heavy plastic freezer bag.
- Label and date each package.
- Freeze and store cuts of meat at 0˚ F or colder for up to 6 months. Meat stored longer may develop off-flavors. See the next page for freezing ground meat.
- Before canning, completely thaw meat in the refrigerator at 40˚ F or colder. This is the safest way to thaw meat, and best preserves meat quality. Meat may also be wrapped in a leak-proof plastic bag and thawed under cold **running** water. Once meat is thawed, follow guidelines on page 2 for handling fresh meat. Can within 1 or 2 days.

Freezing ground meat

Ground meat will maintain better quality frozen rather than canned. Choose fresh, chilled high quality meat for grinding. For venison, add one part high quality pork fat to 3 to 4 parts venison for grinding (see venison precautions).

Package ground meat for freezing by wrapping securely in coated or laminated freezer paper or heavy-duty foil. Label and date clearly. Place wrapped meat in a heavy plastic freezer bag for added protection. Freeze at 0° F or colder for not more than 3 to 6 months. Thaw in the refrigerator.

If you prefer to can ground meat, consider canning it in sauce. See canning guidelines on page 20 and recipes on pages 23-24.

Venison precautions

Chronic Wasting Disease (CWD) is a neurological disease of deer and elk. CWD belongs to a family of diseases known as transmissible spongiform encephalopathies or prion diseases. The disease attacks the brains of infected animals, causing them to display abnormal behavior, lose flesh and bodily function, become very thin and feeble, and die.

CWD was first noted in deer in southern Wisconsin during the 2001 hunting season. Since being identified in captive mule deer in Colorado in 1967, the disease has been found in wild deer and elk in both the United States and Canada. Historically, infection rates in deer herds where the disease is found have varied from 1 to 15 percent. Infection rates of elk are much lower, often less than 1 percent.

Because CWD has been found in some free ranging deer in Wisconsin, the Wisconsin Department of Agriculture, Trade, and Consumer Protection recommends the following precautions:

General precautions when handling deer

- Do not handle or consume the meat from any animal that exhibits symptoms of CWD.
- Do not eat the eyes, brain, spinal cord, spleen, tonsils or lymph nodes of any deer.
- If your deer is sampled for CWD testing, wait for the test results before eating the meat.

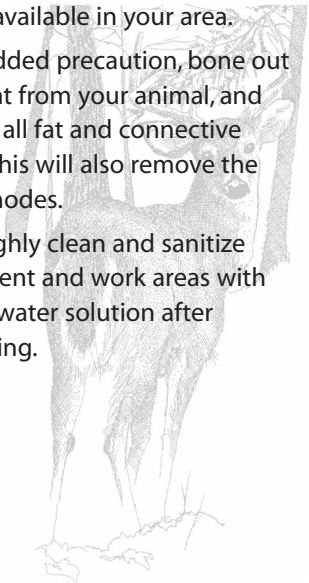
Field dressing

- Wear disposable rubber gloves when field dressing carcasses.
- Remove all internal organs.
- Minimize handling of brain, spinal cord, spleen and lymph nodes as you work.
- Do not use household knives or utensils for processing wild game.

- Clean knives and equipment of residue, and disinfect with a 50/50 solution of household chlorine bleach and water. Soak knives for 1 hour. Wipe down counters and let them dry.

Cutting and processing

- Wear disposable rubber or latex gloves.
- Minimize handling of brain or spinal tissue. If removing antlers, use a saw designated for that purpose only, and dispose of the blade.
- Do not cut through the spinal column except to remove the head. Use a knife designated only for this purpose.
- Dispose of hide, brain and spinal cord, eyes, spleen, tonsils, bones and head in a landfill or by other means available in your area.
- As an added precaution, bone out the meat from your animal, and remove all fat and connective tissue. This will also remove the lymph nodes.
- Thoroughly clean and sanitize equipment and work areas with bleach/water solution after processing.



For the latest venison precautions, contact your local office of the Wisconsin Department of Natural Resources (DNR) or visit their web site (www.dnr.state.wi.us/org/) and search for Chronic Wasting Disease.

Information is also available from the Wisconsin Department of Agriculture, Trade, and Consumer Protection-Animal Health Division. (800) 422-7128 — Weekdays datcp.state.wi.us/— search for Chronic Wasting Disease.

Look for updates including the "From Field to Freezer" video on the UW-Extension Biosecurity Information web site: www.uwex.edu/ces/ag/issues/fmd.

For other safe handling guidelines, see *Wisconsin's Wild Game: Enjoying the Harvest (*B3573), available from your county UW-Extension office or Cooperative Extension Publications, learningstore.uwex.edu.

Fish for canning

Follow the safe handling guidelines for preparing to can all fresh meats and fish on page 10.

Fish are very perishable and require **special handling:**

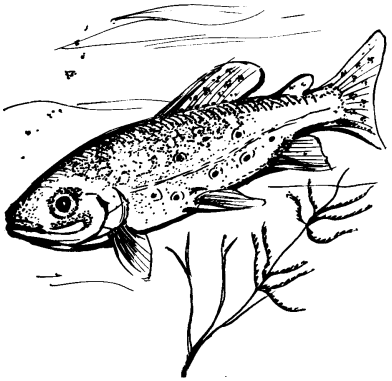
- Remove internal organs from fish soon after they are caught, preferably within 24 hours. Keep freshly caught fish in cold water or on ice until they can be gutted and cleaned.
- Keep cleaned fish on ice or refrigerate until ready to can or freeze. Store at 40° F or colder no longer than 2 days until canning or freezing.
- Fish are most often skinned for canning.
  - —**For large fish,** remove bones and fat from skinned fillets. Cut fillets into pieces that will fit in large-mouth pint or half-pint home canning jars.
  - —**Small fish like smelt** are usually canned whole, minus heads and tails.

Freezing fish

Fish have the best quality when canned fresh. However, if you choose to freeze them for canning at a later date, follow these guidelines. Fish can also be frozen for long-term storage. Glazing fish with a coat of ice keeps air out and moisture in, preserving the flavor and texture.

Glaze and package fish for freezing:

- Clean and scale or remove skin from chilled fish, remove bones and fat, and cut into chunks or fillets.
- Freeze chunks or fillets until solid, and then dip quickly in and out of cold water. A thin coat of ice will form on the fish. Repeat several times to thicken the ice.
- Wrap glazed fish tightly in plastic freezer wrap, plastic or wax-coated freezer paper or aluminum foil, and place in a heavy plastic freezer bag.
- Label and date each package.



- Freeze and store fish at 0˚ F or colder —
  - —**Up to 3 months for fatty fish** such as salmon, smelt and lake trout. These fish lose flavor rapidly, and should be stored only a short time.
  - —**Up to 6 months for lean fish** such as perch and walleye that maintain quality when frozen. These panfish are better preserved frozen than canned.

Frozen fish must be completely thawed before canning. Place frozen fish in a pan and completely thaw in the refrigerator at 40˚ F or colder. **Once the fish is thawed, drain and can immediately.**

Fish advisories

Large predator fish and fish taken from some waters may contain mercury or polychlorinated biphenyls (PCBs) at levels that pose a health concern, especially for children and pregnant or breastfeeding women. The Wisconsin Department of Natural Resources (DNR) issues fish advisories to help you plan what fish to keep as well as how often and how much fish to eat. Call your local DNR or health department, or visit the DNR web site: dnr.wi.gov/fish/consumption.

Warning about wild game

Any wild game animal or bird may be diseased or carry parasites. Do not shoot, handle or consume any animal that appears sick. Cook all wild meats thoroughly to destroy harmful bacteria or parasites.

Follow the precautions for handling deer on page 4. For other safe handling guidelines, see *Wisconsin's Wild Game: Enjoying the Harvest* (B3573), available from your county UW-Extension office.

Caution about freshwater fish

Freshly caught fish must be kept cold and gutted as soon as possible after they are caught. Keep cleaned fish on ice or in the refrigerator, and can or freeze within 2 days. Some fish contain mercury or PCBs at levels that pose a health concern. For help selecting and preparing Wisconsin fish, call your local Department of Natural Resources or health office, or read the latest fish advisories on the web site dnr.wi.gov/fish/consumption.

Pressure canning

Meat, wild game, poultry and fish are low-acid foods and must be processed in a pressure canner for the full time specified to destroy food-poisoning bacteria such as *C. botulinum* spores that might be present. Under no circumstance should you use any other processing method such as boiling water bath, microwave or oven canning. These are unsafe.

To destroy *C. botulinum* spores, low-acid foods must be processed at temperatures higher than the boiling point of water. This can only be achieved by surrounding the jars of food with pure steam under pressure, using a steam pressure canner with at least 16- to 22-quart capacity.

Pressure processing times must be long enough to:

- allow heat to penetrate to the coldest spot in the jar and throughout the food, and
- reach temperatures needed to destroy harmful bacteria and bacterial spores.

Use only the jar size and packing style listed for each recipe. Process for the full time listed. Follow directions in the canning guide on pages 18-30.

Pressure canner

A pressure canner is not the same as a pressure cooker. Pressure cookers are used to rapidly cook meats, vegetables and other foods for a family meal. They may not maintain adequate pressure for home canning. A pressure cooker also heats and cools much more rapidly than a pressure canner, so that foods are not heated long enough to ensure a safe product.

A pressure canner has a dial gauge or weighted gauge. Pressure is created as water boils and is converted to steam in a closed vessel. The steam cannot escape, and pressure and temperature build within the vessel. At a pressure of 10 pounds per square inch (psi), water boils at 240° F — 18 degrees higher than without pressure (at sea level). Food can be canned in a pressure canner quickly and safely at these higher temperatures.

For home canning, use pressure canners that maintain pressures up to 15 psi. See *Using and Caring for a Pressure Canner* (B2593), available from your county UW-Extension office or from Cooperative Extension Publications (learningstore.uwex.edu).

Equipment you will need

Pressure canner,* with rack

Standard home canning jars, clean, hot — Pints or quarts for meat, wild game and poultry; wide-mouth pints for fish

Standard two-piece vacuum seal canning lids — New lids pre-treated according to package directions, and metal screw bands

Metal-stemmed meat thermometer

Sharp knives

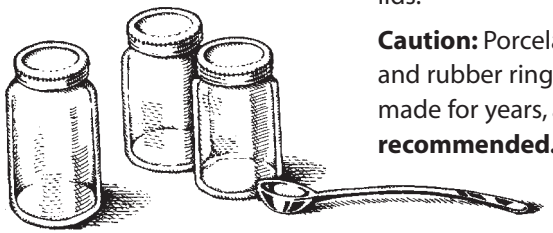
Non-porous cutting board

Deep roasting pan or large kettle

Pot holders, wire rack and labeling supplies

Lid and jar lifters are optional, but nice to have.

* **Note:** Use only a larger 16- to 22-quart pressure canner. Safe processing times have not been determined for smaller pressure canners.



Getting started

Wash all equipment and jars in warm soapy water, rinse with warm water, invert and drain. Jars do not need to be sterilized before filling when processed in a pressure canner, but must be kept hot until filled.

Note: Before and after working with meat, wild game, poultry or fish, be sure to wash utensils, counter tops and cutting boards thoroughly with soap and warm water and rinse well. Then sanitize with a **dilute bleach solution**:

- 1 tablespoon bleach in 1 gallon of warm water, or
- 1 teaspoon bleach per quart of warm water.

After sanitizing, allow utensils, counter tops and cutting boards to air dry.

The standard two-piece vacuum seal lid is the most popular and dependable for home canning. This consists of a flat metal lid with sealing compound to be used only once, and a reusable metal screw band. Follow package directions for pre-treating lids.

Caution: Porcelain-lined zinc caps and rubber rings have not been made for years, and are **no longer recommended.**

Preparing meat, wild game, poultry and fish

Use high quality meat, wild game, poultry or fish that has been properly handled and kept refrigerated. If you are using frozen meats or fish, thaw them in the refrigerator.

Keep meat or fish clean and cold while you are preparing it for canning.

Trim meat or game free of fat, bruises and heavy gristle before canning. Remove skin from poultry. Remove bones from red meats, and larger bones from poultry.

Clean, skin and fillet large fish, taking care to remove bones and fat.

Removing fat not only makes a healthier product, it also helps to ensure a better seal for jar lids. Excess fat can melt out of the meat during pressure processing, coating the sealing surface of the lid and preventing a complete seal.

Follow specific instructions in each recipe for preparing fish and individual cuts of meat, wild game or poultry.

Follow directions for packing hot or raw meat, wild game, poultry, or fish on pages 11-12.

Pre-cook meat if desired

To pre-cook meat, place prepared pieces in a large, shallow pan. Add just enough water to keep meat from sticking. Cover the pan and cook at medium high on the stove or brown in a 350˚ F oven until the meat's internal temperature reaches 135˚ F (rare). Use a metal-stemmed meat thermometer to check the temperature.

To pre-cook poultry, boil, steam or bake pieces until about two-thirds done.

Fish

Fish is most often skinned for canning. Cut large fish fillets into pieces that will fit in pint jars. Small fish like smelt are usually packed whole, minus heads and tails. See canning fish guide on pages 27-30.

For canning fish, pint home canning jars are recommended. Wide-mouth jars work best.

Fatty fish such as catfish, sturgeon, northern pike, salmon, smelt and trout can be successfully canned. Pack prepared fish pieces loosely into pint jars with no added liquid, leaving 1-inch headspace. No water or broth is added to jars when canning smoked fish.

Canning lean fish such as perch and walleye is **not recommended**. Freezing produces a superior quality product (see freezing fish, page 6).

However, if you choose to can lean fish, follow these directions: Pack prepared fish very tightly into pint jars. Press the fish down firmly with a utensil that will fit into the jar, leaving 1-inch headspace. Drain off excess moisture before adding liquid, if required.

Making broth

Hot-pack canning requires enough broth to cover the meat. This improves heat transfer in the jar and helps ensure adequate heat during pressure processing. For hot pack, wild game will benefit from a tomato-based broth.

To make meat or poultry broth, place bony pieces of meat in a kettle. Cover with cold water. If desired, season with chopped onion, celery, salt or other spices. Simmer until meat can be removed from the bone.

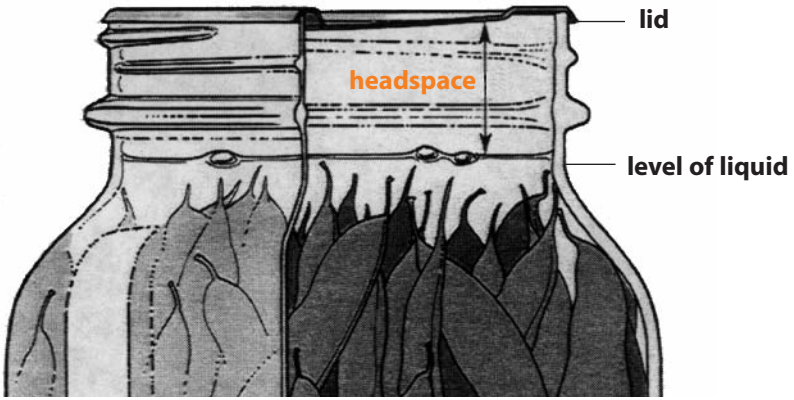
Strain broth, cool quickly and skim off fat. If broth is not flavorful enough, add bouillon cubes or soup stock base which are available in most grocery stores.

Packing methods

Meat can be packed either hot or raw. The **hot pack method** is recommended for most meats, as it consistently yields a safe, high quality product. The **raw pack method** is an option for only larger pieces of meat, wild game or poultry, or fatty fish.

To pack hot, prepare broth and cook meat, wild game or poultry to 135˚ F. Pack hot into clean, hot home canning jars, and cover with boiling broth leaving proper headspace (see illustration below).

Headspace



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To pack raw, place larger pieces of meat loosely into jars leaving proper headspace. No liquid is added, since juices will form during processing.

Salmon, trout and other fatty fish are packed raw with no added liquid. Smoked fish is also packed with no added liquid.

Regardless of the type of pack used, the processing conditions (time and pressure) must be followed exactly. Proper canning will cook the meat and destroy harmful bacteria, resulting in a safe product. See guidelines and recipes for canning meats on pages 18-26, and guidelines for canning fish on pages 27-30.

Closing the jars

Fill clean, hot standard home canning jars, leaving proper headspace. Wipe jar rims with a clean, damp cloth or towel to remove any food particles or broth.

Place a pre-treated lid on the jar. Screw the metal band until it feels finger-tight. Overtightening may cause the lid to buckle. During processing in the pressure canner, the band will allow the lid to expand enough to let air and steam escape from the jar.

When jar contents cool after processing, the remaining steam condenses and a partial vacuum forms. The partial vacuum keeps the center of the lid down when the jar is properly sealed.

Processing in a pressure canner

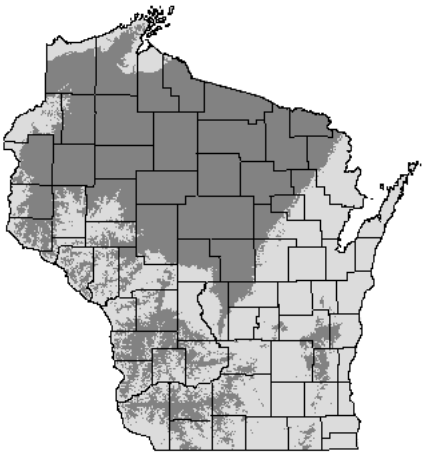
Adjust processing for Wisconsin elevations

Wisconsin elevations range from 580 to 1,953 feet above sea level. Water boils at 212˚ F at sea level, and at lower temperatures as elevation increases. Using the processing time for sea level may lead to spoilage or unsafe food if you live at higher elevations. Be sure to process meat, wild game, poultry or fish at the proper canner pressure and for the correct processing time for your elevation.

Check the canner and pressure gauge

Before you start canning, be sure the canner is in good operating condition. Have a dial pressure gauge tested each canning season to be sure it measures pressure accurately. For dial gauge testing, contact your county UW-Extension office (www.uwex.edu/ces/cty/).

Canners with weighted pressure regulators do not require testing. But the regulators and vent pipes must be kept clean, and gaskets need to be in good condition. Replace any rubber gaskets that are old or leaking. See *Using and Caring for a Pressure Canner* (B2593), available from your county UW-Extension office or online learningstore.uwex.edu.



Elevation above 1,000 feet

Elevation below 1,000 feet

Elevation map

Remember to adjust for elevation when pressure canning meats, wild game, poultry and fish. Consult the elevation map, or call your county Land Information office (listed under county government in your phone book). If you share recipes with friends and relatives, remember to include adjustments for changes in elevation.

Processing steps

1. Put 2 to 3 inches of water in the canner and heat to simmer. Use enough water so the canner does not boil dry.
2. Set filled jars on a rack in the canner. Leave room for steam to flow freely around jars. In canners deep enough to stack jars, use a rack between layers.
3. Fasten the canner cover securely and heat until you see a funnel of steam escape from the open vent pipe. Once the funnel of steam appears, continue to heat on high. **Vent for 10 minutes to drive air from the canner.** If air remains in the canner, the temperature in the canner will not be as high as expected and the jars may be under-processed.
4. Close the petcock or place the pressure regulator on the vent pipe. Let pressure rise to the correct processing pressure, then start to count processing time. Regulate heat to maintain constant pressure. If the pressure falls below the recommended level, bring it back up and re-time the canning process from the very beginning.
5. When the processing time is complete, turn off the heat. Remove the canner from the burner, if possible, and let the pressure drop on its own. Do not pour cold water over the canner to reduce pressure. This will cause jars to lose liquid and fail to process fully; it also causes seals to fail.
6. When the pressure reaches zero, wait 2 to 3 minutes and carefully remove the cover. Tilt the canner cover to release steam away from you. Remove jars from the canner, place them on a protected surface (rack or towel), and cool at room temperature away from drafts. The metal bands may be loose at this point, but do not re-tighten them.

Checking seals

Check seals when jars are completely cool — often within 2 to 4 hours, but at least within 24 hours. If the center of the flat metal lid is depressed or down and does not move when you press on it, the jar is sealed.

In most cases, jars will seal within a few hours after removal from the canner, but may take longer. Refrigerate unsealed jars immediately and use them within 2 or 3 days. Or label, date and freeze them immediately for use within 6 months.

Jars of meat, wild game or poultry that fail to seal but were properly processed may be re-processed within 24 hours, but must be hot packed with added liquid. Process again for the full time and cap with new pre-treated lids.

Jars of fish that fail to seal **should not be re-processed** for reasons of safety and quality.

Liquid lost during processing will not cause meat or fish to spoil. Do not add liquid to jars removed from the canner. Any attempt to open the jars and replace lost liquid will contaminate the sterile contents and the food will have to be re-processed or discarded.

Storing jars

Remove metal screw bands. Wipe sealed jars clean, label and date. For best quality, use home-canned food within 1 year. Properly home-canned food will remain safe for years, but quality will suffer from extended storage.

Store jars in a cool, dry place to retain the best eating quality and prevent lids from rusting. Excess heat can cause the canned product to lose quality, and moisture can cause lids to corrode.

Sulfur compounds in meat often cause metal lids (or cans) to darken. This discoloration does not affect meat safety.

If you pressure can young poultry with bones in, tissue near the bones may darken on canning. This discoloration is due to blood cells leaching from the bones on heating and reacting with the muscle tissue. This discoloration is not harmful.

In an unheated storage area, protect canned food by wrapping jars in paper and covering them with a blanket. Move them to a heated area when the temperature drops to freezing. Freezing will not cause canned meat, poultry, wild game or fish to spoil unless the seal is damaged when the jar contents expand. Discard any jars of food unsealed or damaged by freezing.

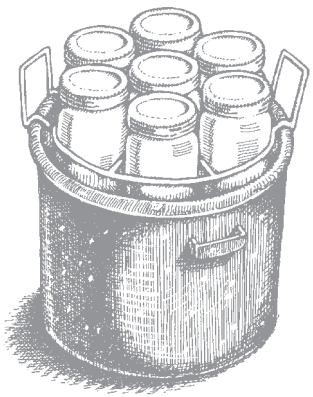
Check for spoilage

Carefully inspect jars before you use them. Spoilage may have occurred if:

- Jars have unsealed or bulging lids.
- Liquid spurts when the jar is opened.
- Contents appear discolored or foamy, or have an off-odor. See boxed note on page 15 for when darker meat is OK.

Do not taste suspect or spoiled food. Follow the instructions in the box for safely discarding or de-toxifying canned meat, wild game, poultry or fish.

Meat, wild game, poultry or fish that spoils in a jar may contain the deadly toxin produced by *Clostridium botulinum*. Jars of any of these foods that become spoiled must be handled carefully to avoid illness or death.



Safely discard spoiled food

Safely discard meat, wild game, poultry or fish that is spoiled or that becomes unsealed. Never taste suspect food. Even if the meat shows no obvious signs of spoilage, dispose of the jars in one of these two ways:

If the suspect jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container or bury it in a nearby landfill.

If the suspect jars are unsealed, open or leaking, de-toxify the jars and their contents before discarding.

Place suspect jars in an 8-quart or larger pan. Carefully add water to cover by 2 inches and boil for 30 minutes. Cool and discard the jars, their lids and food in the trash, or bury in soil. Sanitize counter tops and all equipment used with a dilute bleach solution (see page 9). Discard sponges or washcloths used in the clean up.

Canning meat and vegetable mixtures

When you pressure can combinations of meat and vegetables, you must process the mixture long enough so that both the meat and vegetables are safe to eat. Product quality will be better if you choose vegetables such as corn, potatoes and carrots that will tolerate the long processing times necessary for meat.

However, for best quality and greatest flexibility, can meat and vegetables separately, and then mix ingredients as you prepare meals [see *Canning Vegetables Safely* (B1159) in this series].

Be sure you follow filling instructions, so the amount of food in each jar is not greater than stated. The guidelines assure proper heating for specific combinations and proportions of foods, so any changes may result in an unsafe or underprocessed product.

Do not thicken with flour or cornstarch, or add rice, barley or pasta to canned meat, wild game, poultry or fish. These starchy ingredients absorb liquid during processing, and change how heat transfers. Underprocessing and unsafe food could result.

Use only tested recipes for home canning. Sources of tested recipes include this series and the USDA *Complete Guide to Home Canning* (2008) which is available from the National Center for Home Food Preservation (www.uga.edu/nchfp/).

Items prepared with untested recipes should not be canned. Freeze these foods instead. Canning foods at home is no time to experiment with recipes! The safety of you and your family could be at risk.

To avoid spoilage and risk of food poisoning, follow the research-tested recipes in this booklet. You may substitute venison for beef in most of these recipes (see precautions on pages 4-5).

Guidelines in this booklet are for safe pressure canning at all Wisconsin elevations.

Operate:

- **dial gauge canners** at 11 pounds pressure (11 psi) at elevations up to 2,000 feet above sea level.
- **weighted gauge canners** at
  - — 10 psi at elevations up to 1,000 feet above sea level.
  - — 15 psi above 1,000 feet elevation.

See elevation map on page 13.

Canning wild game

Use only high quality, properly cleaned and cooled healthy wild game for canning. To ensure safety, process jars for the full time in a pressure canner to kill all bacteria that cause spoilage or food poisoning.

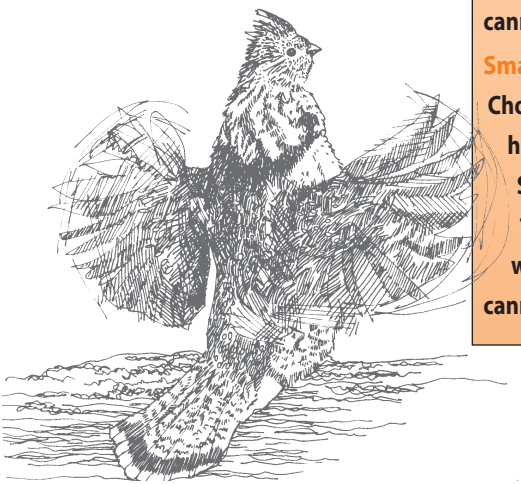
Large game animals are canned like beef, and small game animals and birds are canned like poultry. Follow directions for type of pack and preparation. For hot pack, wild game will benefit from tomato broth.

Large game animals

Choose fresh, high quality chilled meat from healthy animals. Remove fat. Soak strong-flavored wild meats for 1 hour in brine containing 1 tablespoon salt per quart of cold water. Rinse. Remove large bones and prepare as directed for canning.

Small game animals and birds

Choose freshly killed and dressed healthy animals or birds. Remove fat. Soak meat 1 hour in brine containing 1 tablespoon salt per quart of cold water. Rinse. Prepare as directed for canning, with or without bones.



Broth or stock, beef or other meat; hot pack only

Saw or crack fresh beef bones and place in a large stockpot or kettle. Cover bones with water, add salt, chopped celery and onions, and simmer until meat can be easily removed from bones, 3 to 4 hours. Strain broth to remove gristle, skin, bits of bone and vegetables. Skim off fat, and add to broth any small pieces of meat removed from bones.

Hot pack: When filling canning jars, make sure meat pieces are no larger than 1/4 inch and only cover the bottom of the jar. Broth with larger pieces or more meat than this must be canned as meat cubes, chunks or strips (see page 20).

Reheat broth to boiling. Fill clean, hot jars, leaving 1-inch headspace. Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 20 minutes for pints, 25 minutes for quarts.

Broth or stock, chicken or turkey; hot pack only

Place large carcass bones in a large stockpot, add enough water to cover bones, and cover pot with lid. Simmer 30 to 45 minutes or until meat can be easily stripped from bones. Discard bones and fat. Strain broth to remove bones and pieces, and cool. Skim off fat. Add to broth any small pieces of meat removed from bones.

Hot pack: When filling canning jars, make sure meat pieces in the broth are no larger than 1/4 inch and only cover the bottom of the jar. Broth with larger pieces or more meat than this must be canned as poultry without bones (see page 21).

Reheat broth to boiling. Fill clean, hot jars, leaving 1-inch headspace. Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 20 minutes for pints, 25 minutes for quarts.

*Canner pressure

Dial gauge, up to 2,000 ft.— 11 lbs. pressure
Weighted gauge, up to 1,000 ft.— 10 lbs. pressure
Weighted gauge, above 1,000 ft.— 15 lbs. pressure
See elevation map on page 13.

Cubes, chunks or strips of beef, venison, veal, lamb or pork

Choose high quality chilled meat. Remove fat. Soak strong-flavored wild meats for 1 hour in brine of 1 tablespoon salt per quart of cold water. Rinse. Remove bones and cut into cubes, chunks or strips for canning.

Hot pack: Pre-cook meat to 135˚ F internal temperature (rare) by roasting, stewing or browning in a small amount of fat. Add 1 teaspoon salt per quart jar, if desired. Loosely fill clean, hot jars with hot meat. Cover meat with boiling broth, meat drippings, water or tomato juice (especially with wild game), leaving 1-inch headspace.

Raw pack: Fill clean, hot jars loosely with raw meat pieces, leaving 1-inch headspace. Do not add liquid.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 75 minutes for pints, 90 minutes for quarts.

*Canner pressure

Dial gauge, up to 2,000 ft.—
11 lbs. pressure
Weighted gauge, up to 1,000 ft.—
10 lbs. pressure
Weighted gauge, above 1,000 ft.—
15 lbs. pressure
See elevation map on page 13.

Ground meat — beef or venison, veal, lamb, pork or sausage; hot pack only

Choose fresh, chilled high quality meat for grinding.

For venison, add 1 part high quality pork fat to 3 to 4 parts venison before grinding.

For sausage, use freshly made sausage, seasoned with salt and cayenne pepper. (Sage may cause a bitter off-flavor).

Shape ground meat into uniform balls or patties, or cut cased sausage into 3- to 4-inch links. Cook until lightly browned and drain off fat.

Consider canning in tomato juice or sauce (see recipes on pages 23-24).

Hot pack: Fill clean, hot jars loosely with hot pre-cooked meatballs, patties or links, leaving 1-inch headspace. Add 1 teaspoon salt per quart jar, if desired. Cover with boiling broth, water or tomato juice (especially with wild game), leaving 1-inch headspace.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 75 minutes for pints, 90 minutes for quarts.

Poultry — chicken or turkey, duck, goose, game birds, rabbit

Chill dressed birds for 6 to 12 hours before canning. Remove excess fat. Cut poultry into suitable sizes for canning. Can with or without bones.

Hot pack: Boil, steam or bake meat until about two-thirds done. Add 1 teaspoon salt per quart to the jar, if desired. Fill clean, hot jars with hot meat and hot broth, leaving 1 1/4-inch headspace.

Raw pack: Add 1 teaspoon salt per quart, if desired. Fill clean, hot jars loosely with raw meat pieces, leaving 1 1/4-inch headspace. Do not add liquid.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Bone in — Process in a pressure canner at the recommended pressure:* 65 minutes for pints, 75 minutes for quarts.

Without bones — Process in a pressure canner at the recommended pressure:* 75 minutes for pints, 90 minutes for quarts.

Small game — rabbit and squirrel

Choose freshly killed and dressed, healthy animals. Soak chilled meat in the refrigerator for 1 hour in brine of 1 tablespoon salt per quart (4 cups) of cold water. Rinse. Pre-cook by simmering or steaming until skin can be easily removed. Discard skin and fat. Cut small game into suitable sizes for canning, and leave bones in.

Hot pack: Boil, steam or bake meat until about two-thirds done. Fill clean, hot jars with hot meat and hot broth or tomato juice, leaving 1 1/4-inch headspace. Add 1 teaspoon salt per quart jar, if desired.

Raw pack: Fill clean, hot jars loosely with raw meat pieces, leaving 1 1/4-inch headspace. Do not add liquid. Add 1 teaspoon salt per quart jar, if desired.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 75 minutes for pints, 90 minutes for quarts.

Tongue, sliced, or poultry gizzards; hot pack only

Soak tongue in cold water for 2 hours, scrubbing it thoroughly and changing the water every 30 minutes. Rinse.

Put meat in a kettle, cover with fresh water, and bring to a boil. Skim off foam, then salt the water lightly; cover and cook to 145° F. Remove from kettle and plunge into cold water, peel off skin and trim off gristle. Slice tongue into 1/4-inch slices.

Hot pack: Pack slices or gizzards loosely into clean, hot jars. Add seasoning, if desired. Cover with hot water or broth, leaving 1-inch headspace.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at the recommended pressure:* 75 minutes for pints, 90 minutes for quarts.

Note: Do not can deer tongue.

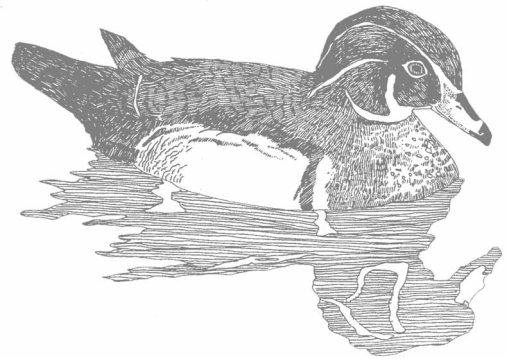
*Canner pressure

Dial gauge, up to 2,000 ft.—
11 lbs. pressure

Weighted gauge, up to 1,000 ft.—
10 lbs. pressure

Weighted gauge, above 1,000 ft.—
15 lbs. pressure

See elevation map on page 13.



Vegetable-beef stew

4 cups lean beef or venison, cut in 1-inch cubes

4 cups potatoes, peeled and cut in 1-inch chunks

4 cups carrots, peeled and cut in 1/2-inch slices

4 cups small whole onions or quartered medium onions, peeled

2 cups celery, cut in 1-inch pieces

4 to 8 cups meat broth or tomato juice (for venison), as needed

1/2 tsp. salt per pint (optional, for flavor)

Hot pack: Pre-cook meat as described for hot pack on page 11. Combine with the prepared vegetables. Pack hot meat and vegetables loosely into clean, hot jars, leaving 1-inch headspace. Add salt, if desired. Cover with boiling broth, leaving 1-inch headspace.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at recommended pressure:*
75 minutes for pints,
90 minutes for quarts.

Note: Do not thicken broth before canning. Add cornstarch or flour to thicken just before serving vegetable-beef stew.

Yield: 8 pints

Sloppy Joe mix

4 lbs. lean ground beef or venison, or a combination

3 cups onion, peeled and chopped

1 1/2 cups green pepper, cored and chopped

1 16-ounce can tomato sauce

2 cups tomato catsup

2 cups water

1 tbsp. salt

1 tbsp. sugar

1 tbsp. prepared mustard

3/4 tsp. black pepper

Hot pack: Sauté beef or venison and onion. Drain off fat. Add remaining ingredients, bring to a boil and simmer 5 minutes.

Pack hot into clean, hot jars, leaving 1-inch headspace.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at recommended pressure: *
75 minutes for pints,
90 minutes for quarts.

Yield: 8 pints

Note:

lb. = pound
tbsp. = tablespoon
tsp. = teaspoon
1 quart = 2 pints = 4 cups

Chili con carne

Beans:

3 cups dried pinto or kidney beans

5 1/2 cups water

2 tsp. salt

Meat:

3 lbs. lean ground beef or venison, or a combination

1 1/2 cups onion, peeled and chopped

1 cup sweet or hot peppers, cored and chopped (optional)

1 tbsp. salt

1 tsp. black pepper

3 to 6 tbsp. chili powder

8 cups tomatoes, crushed or whole

Wash beans thoroughly and place in a 2-quart saucepan. Add cold water to a level 2 to 3 inches above the beans and soak 12 to 18 hours. Drain and discard water. Combine the beans with 5 1/2 cups of fresh water and 2 teaspoons salt. Bring to a boil. Reduce heat and simmer for 30 minutes. Drain and discard water. Brown ground beef or venison, onion and peppers. Drain off fat. Add all other ingredients and simmer 5 minutes. Do not thicken until you serve the canned chili.

Hot pack: Fill clean, hot pint jars, leaving 1-inch headspace. Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at recommended pressure:*
75 minutes for pints. Do not use quarts; safe processing time has not been determined.

Caution: Wear rubber gloves when you cut or chop hot peppers. Do not touch your face, particularly near your eyes.

Yield: 9 pints

Spaghetti sauce with meat

5 lbs. lean ground beef or venison, or a combination

6 quarts tomatoes, peeled and chopped

1 onion, peeled and chopped

2 cups green sweet peppers, cored and chopped

1/4 cup parsley, chopped (optional)

2 cloves garlic, peeled and minced

1 1/2 tbsp. salt

1 tbsp. sugar

1 tbsp. sweet basil, crushed

Sauté beef or venison and onion until all pink is gone from meat. Drain off fat. Add remaining ingredients, heat rapidly to simmering and simmer until thickened, about 1 hour. Stir often.

continued,

Hot pack: Bring sauce to a boil. Fill clean, hot jars, leaving 1-inch headspace. Remove air bubbles, wipe jar rims clean, and adjust lids.

**Process in a pressure canner at recommended pressure:*
75 minutes for pints,
90 minutes for quarts.**

Note: You may alter seasonings according to your preferences, but do not add pasta to the mixture before canning. An unsafe product may result.

Yield: 6 to 7 pints

All-purpose chicken-vegetable mix

8 to 10 lbs. chicken, game bird or rabbit, cut in pieces

1 tbsp. salt

1/2 tsp. pepper

1 tbsp. parsley, chopped

Water, to cover

1 cup onion, peeled and chopped

2 cups celery, chopped

2 cups carrots, peeled and sliced thinly

Place chicken, salt, pepper and parsley in a large kettle. Cover with water and bring to a boil. Simmer until chicken can be removed from the bones.

Remove and discard skin and bones. Discard fat. Save broth.

Add onion, celery and carrots to broth and bring to a boil. Stir in chicken pieces.

Hot pack: Fill clean, hot jars with hot chicken-vegetable mixture, leaving 1-inch headspace. Cover with boiling broth, leaving 1-inch headspace.

Remove air bubbles, wipe jar rims clean, and adjust lids.

**Process in a pressure canner at recommended pressure:*
75 minutes for pints,
90 minutes for quarts.**

Note: This mix can be used for chicken stew, hearty soups, chicken a la king, or casseroles. Add cornstarch or flour to the liquid to thicken just before serving. Do not thicken for canning.

Yield: 7 to 8 pints

*Canner pressure

Dial gauge, up to 2,000 ft.—
11 lbs. pressure
Weighted gauge, up to 1,000 ft.—
10 lbs. pressure
Weighted gauge, above 1,000 ft.—
15 lbs. pressure
See elevation map on page 13.

Meat and vegetable soup

Vegetable, dried bean or pea, meat, poultry, or seafood soups can be canned.

Select, wash, and prepare vegetables, meat and seafoods as described for the specific foods. Cover meat with water and cook until tender. Cool meat and remove bones. Cook vegetables. For each cup of dried beans or peas, add 3 cups of water, boil 2 minutes, remove from heat, soak 1 hour, and heat to boil; drain.

Hot pack: Combine solid ingredients with meat broth, tomatoes, or water to cover. Boil 5 minutes. Caution: Do not thicken. Salt to taste, if desired. Fill jars **halfway** with solid mixture. Add cooking liquid, leaving 1-inch headspace. Remove bubbles, wipe rims clean and adjust lids.

Process in a pressure canner at recommended pressure*: 60 minutes for pints, 75 minutes for quarts.**

**Process soup for 100 minutes if it contains seafood.

*Canner pressure

Dial gauge, up to 2,000 ft.—
11 lbs. pressure
Weighted gauge, up to 1,000 ft.—
10 lbs. pressure
Weighted gauge, above 1,000 ft.—
15 lbs. pressure
See elevation map on page 13.

Festive mincemeat pie filling

2 cups finely chopped suet

4 lbs. ground beef or (4 lbs. ground venison and 1 lb. sausage)

5 qts. chopped apples

2 lbs. dark seedless raisins

1 lb. white raisins

2 qts. apple cider

2 tbsp. ground cinnamon

2 tsp. ground nutmeg

5 cups sugar

2 tbsp. salt

Yield: About 7 quarts

Cook suet and meat in water to avoid browning. Peel, core, and quarter apples. Put meat, suet, and apples through food grinder using a medium blade. Combine all ingredients in a large saucepan, and simmer 1 hour or until slightly thickened. Stir often.

Hot pack: Fill jars with hot mixture, leaving 1-inch headspace. Remove air bubbles, wipe rims and adjust lids.

Process in a pressure canner at recommended pressure*: 90 minutes for quarts.

Canning fish

Glass-like crystals of magnesium ammonium phosphate sometimes form in canned salmon. These crystals usually dissolve when heated, and are perfectly safe to eat. There is no way for the home canner to prevent their formation.

Fatty fish such as catfish, northern pike, salmon, smelt or trout may be successfully canned.

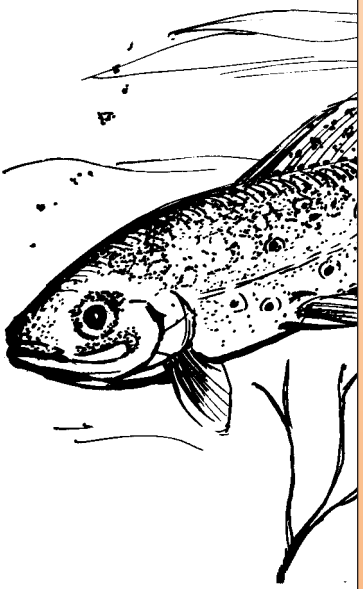
Canning lean fish such as perch or walleye does not yield a high quality product. It is best to freeze lean fish for extended storage (see pages 6-7).

Lightly smoked salmon, trout and other fish may be safely canned. Safe processing times for canning other smoked seafood, such as oysters, have not been determined for home use. These products must be frozen.

Smoked fish should be canned using tested methods. Lightly smoked fish is recommended for canning. However, because it has not yet been cooked, do not taste lightly smoked fish before canning.

Follow these canning guidelines carefully. Use a 16- to 22-quart pressure canner; smaller canners may yield an unsafe product. Do not use quart jars or tin cans.

Pint jars are recommended for canning fish. Half-pints can be safely processed for the same length of time as pints, but may yield a less acceptable product. Safe processing times have not been determined for quart jars.



Salmon, trout, northern pike, smelt, and other fatty fish except tuna

Pint jars

Avoid delays in cleaning and gutting fish. Keep cleaned fish on ice, or refrigerate at 40° F or colder until ready to can, not more than 2 days.

Remove head, tail, fins and scales or skin. Wash, and remove all blood. Split fish lengthwise and remove skin, if desired. You can leave the bones in most fish because they become very soft and are a good source of calcium. Cut cleaned fish into 3 1/2-inch lengths.

Smelt are usually canned whole, with only heads and tails removed.

Raw pack: Fill hot, wide-mouth pint jars, skin side next to glass, leaving 1-inch headspace. Add 1/2 teaspoon salt per pint jar, if desired. Do not add liquid.

Remove air bubbles, wipe jar rims clean, and adjust lids.

Process in a pressure canner at recommended pressure:*
100 minutes for pints.

Quart jars

Prepare fish as directed for canning in pint jars. Cut the fish into jar-length filets or chunks of any size. The one-quart straight-sided mason-style jar is recommended. If the skin has been left on the fish, pack the fish skin out, for a nicer appearance, or skin in, for easier jar cleaning. Pack solidly into clean, hot quart jars, leaving 1-inch headspace. For most fish, no liquid, salt, or spices need to be added, although seasoning or salt may be added for flavor (1 to 2 teaspoons salt per quart). Carefully wipe jar rims, adjust lids and process.

Note the processing of quart jars is different from processing of pints; read directions carefully before proceeding. It is critical to product safety that the processing directions are followed exactly. When you are ready to process quart jars of fish, add 3 quarts of water to the pressure canner. Put the rack in the bottom of canner and place closed jars on the rack. Fasten the canner cover securely, but do not close the lid vent. Heat the canner on high for 20 minutes. If steam comes through the open vent in a steady stream at the end of 20 minutes, allow it to escape for an additional 10 minutes. If steam does not come through the open vent in a steady stream at the end of 20 minutes, keep heating the canner until it does. Then allow the steam to escape for an additional 10 minutes to vent the canner. The total time that it takes to heat and vent the canner should never be less than 30 minutes. The total time may be

more than 30 minutes if you have tightly packed jars, cold fish, or larger sized canners. For safety's sake, you must have a complete, uninterrupted 160 minutes (2 hours and 40 minutes) at a minimum pressure required for your altitude.

Raw pack. Process in a pressure canner at recommended pressure:* 160 minutes for quarts

Canning lean fish such as perch or walleye is not recommended. However, if you choose to can lean fish, follow directions above for fatty fish, packing prepared fish very tightly into *pint* jars. Press the fish down firmly with a utensil that will fit into the jar, leaving 1-inch headspace. Drain off excess moisture. Do not add liquid.

Remove air bubbles, wipe jar rims clean, and adjust lids.

See processing directions above.

Smoked fish — salmon, trout and other fish, lightly smoked

Cut lightly smoked fish into pieces that will fit on end into clean, hot, pint canning jars, leaving 1-inch headspace. Do not add liquid. Remove air bubbles, wipe jar rims clean, and adjust lids.

Measure 4 quarts (16 cups) of cool tap water and pour into a 16- to 22-quart pressure canner. The water level will probably reach the screw bands of pint jars. **Do not decrease the amount of water or heat the water before processing begins.**

Place prepared, closed jars on the rack in the bottom of the canner.

Process in a pressure canner at recommended pressure:* 110 minutes for pints.

*Canner pressure

Dial gauge, up to 2,000 ft.— 11 lbs. pressure
Weighted gauge, up to 1,000 ft.— 10 lbs. pressure
Weighted gauge, above 1,000 ft.— 15 lbs. pressure
See elevation map on page 13.

Tuna

Tuna may be canned either pre-cooked or raw. Pre-cooking removes most of the strong-flavored oils. The strong flavor of dark tuna flesh affects the delicate flavor of white flesh. Many people prefer not to can dark flesh. It may be used as pet food.

Note: Glass-like crystals of magnesium ammonium phosphate sometimes form in canned tuna. There is no way for the home canner to prevent these crystals from forming, but they usually dissolve when heated and are safe to eat.

Keep tuna on ice until ready to can. Remove viscera and wash fish well in cold water. Allow blood to drain from stomach cavity. Place fish belly down on a rack or metal tray in the bottom of a large baking pan. Cut tuna in half crosswise, if necessary. Pre-cook fish by baking at 250° F for 2 1/2 to 4 hours (depending on size) or at 350° F for 1 hour. The fish may also be cooked in a steamer for 2 to 4 hours. If a thermometer is used, cook to a 165˚ to 175˚ F internal temperature. Refrigerate cooked fish overnight to firm the meat. Peel off the skin with a knife, removing blood vessels and any discolored flesh. Cut meat away from bones; cut out and discard all bones, fin bases, and dark flesh.

Quarter. Cut quarters crosswise into lengths suitable for half-pint or pint jars. Fill into clean, hot jars, pressing down gently to make a solid pack. Tuna may be packed in water or oil, whichever is preferred. Add water or oil to jars, leaving 1-inch headspace. Add 1/2 teaspoon of salt per half-pint or 1 teaspoon of salt per pint, if desired. Remove air bubbles, wipe jar rims and process.

Process in a pressure canner at recommended pressure*: 100 minutes for pints and half-pints

***Canner pressure**

Dial gauge, up to 2,000 ft.—
11 lbs. pressure

Weighted gauge, up to 1,000 ft.—
10 lbs. pressure

Weighted gauge, above 1,000 ft.—
15 lbs. pressure

See elevation map on page 13.

Choosing a meat processor

While some people have the right equipment and knowledge to butcher their own animals, most are well advised to have a commercial meat processor do the job.

Commercial meat processors operate under Wisconsin or federal meat inspection regulations. These regulations require that facilities and handling methods meet sanitation standards.

Custom processing plants with limited facility inspection may only slaughter and process animals for the person who owns the animal, and the meat may not be resold. Custom plants can offer meat and meat products for retail sale only if they purchase inspected meat from other sources.

Fully inspected plants are under more stringent inspection regulations, including examination of live animals and carcasses at slaughter. These plants may process the inspected meat into hams, sausages and other processed meats. They or the animal owners may sell fresh meat cuts from the inspected animals.

Wisconsin Safe Food Preservation Series publications

Canning Fruits Safely (B0430)

Canning Meat, Wild Game, Poultry and Fish Safely (B3345)

Canning Salsa Safely (B3570)

Canning Vegetables Safely (B1159)

Freezing Fruits and Vegetables (B3278)

Homemade Pickles and Relishes (B2267)

Making Jams, Jellies and Fruit Preserves (B2909)

Tomatoes Tart and Tasty (B2605)

Using and Caring for a Pressure Canner (B2593)

Wisconsin's Wild Game: Enjoying the Harvest (B3573)

These are available from your county UW-Extension office or Cooperative Extension Publications (learningstore.uwex.edu).

Web sites

National Center for Home Food Preservation, University of Georgia, www.uga.edu/nchfp/

NOTES

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